



Supermicro Super Diagnostics Offline User's Guide

Revision 1.10.0

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Revision History

Date	Rev	Description
April 17, 2017	1.0	1. Initial document.
June 27, 2018	1.1.0	1. Added the command to access the graphic user interface. 2. Added the section about the graphical user interface of Supermicro Super Diagnostics Offline.
July 10, 2019	1.2.0	1. Changed summary log format to Hypertext (.html) in section 2.1.1 in this user's guide. 2. Added sections 2.1.1.1 <i>Viewing the Summary Log in HTML Format</i> , 2.1.1.2 <i>Viewing System Information</i> , 2.1.1.3 <i>Viewing Event Log</i> , and 2.1.1.4 <i>Viewing Sensor Readings</i> in this user's guide. 3. Added the notes of using the command diag start under Windows 10 in section 2.2.2.1 in this user's guide. 4. Added parameter "line" of command diag display in section 2.2.2.3 in this user's guide. 5. Added <i>Chapter 4 Troubleshooting</i> in this user's guide. 6. Updated the MB support list in section 1.1. 7. Added the required graphics resolution for GUI mode (1024 x 768) in section 2.1.2.
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May 7, 2021	1.5.0	1. Updated the prerequisites in section 1.1 2. Updated the component support list in section 1.4. 3. Updated the primary parameters in section 3.1. 4. Added 5 <i>Third-Party License</i> .
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June 7, 2024	1.10.0	<ol style="list-style-type: none">1. Updated the prerequisites in section 1.1.2. Updated the GPU detection support list in section 1.4.3. Update the Diagnosing the Target System Remotely in section 2.2.

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```
Name: SMC_cookie Session: 973016679.275537
Timestamp: 20040721258
Portal: 0
Expires: Tue, 01-Aug-2004 22:40:58 GMT
Domain: Supermicro.com
Path: /
```

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1 Overview

The intricacy of today's computer systems makes it difficult to find the root cause of faults or problems within a system. For this reason, the Supermicro Super Diagnostics Offline was designed to provide a complete diagnosis of a system and its components at system boot-up.

With this tool, you can take an inventory of the quantities of installed devices and BIOS of the target system, double-check the previous record with the actual quantities and current BIOS data, and check some devices for errors. These devices include the CPU, memory, BMC, HDD, USB, power supply, backplane, PCIe, VGA, and network.

1.1 Prerequisites

- The Supermicro Super Diagnostics Offline is applicable on systems with the following motherboards:
- **Intel Platform:**
 - X10 UP/DP series, X11 UP/DP series, X10 QP series, X11 SoC series, X11 QP series, X12 UP/DP series, X12QP series, X13 UP/DP series, X14 UP/DP series, B1/B4/B10/B11/B12/B13 series.
- **AMD Platform:**
 - H11 UP/DP series, H12 UP/DP series, H13 UP/DP series, H14 UP/DP series, and BH12 series.
- **ARM Platform:**
 - G1 series.
- Set the date and time at the local system before running the tool.
- For storage diagnostics, it is necessary to change the following BIOS setting for NVMe drive testing:
 - Set NVMe Firmware Source to AMI Native Support.
- For network diagnostics, it is necessary to change the following BIOS settings for testing:
 - Enable Network Stack.
 - Set LAN OPROM type to EFI.
- For remote diagnostics:
 - BMC firmware and SMCIPMITool are both required. Make sure their revisions are the same as or newer than those that support the Supermicro Super Diagnostics Offline. Find the revision numbers of the required software in the "readme" file in the Supermicro Super Diagnostics Offline package.
 - The command instructions are transmitted via the BMC. Make sure the network connection is established and maintained when initiating.
 - G1 series motherboards currently support remote diagnostics via remote management software (SSM).
- The SFT-DCMS-SINGLE license is required to:
 - Collect and detect SAS card information (AOC-S3616L-L16iT)
- For the memory diagnostics/drive self-test, the amount of time to run the test depends on the memory/drive size. It may take a longer time than expected. The memory diagnostics is disabled by default on G1 series motherboards.

-
- A non-BMC-supported motherboard doesn't support sensor reading.

1.2 Diagnostic Process

When the Supermicro Super Diagnostics Offline starts, it collects information on the devices installed on the target system to generate the basic system information. Based on this information, the tool then detects the devices and ensures their presence. Upon detection, the tool can use the detection results to diagnose the health status of the devices.

1.3 Tool Interface

The Supermicro Super Diagnostics Offline requires commands to run the diagnostics. The supported parameters are listed in *Chapter 3 Using Parameters*. While the diagnostics are running, the results are summarized and the problematic components are displayed on screen.

1.4 Supported List of Components for Diagnosis

Component	Diagnosis Area
BIOS	Checks the BIOS POST errors from NVRAM and reports any failed results. The BIOS image checksum is also checked.
CPU	Checks the CPU for floating-point, instruction (X86: SSE, SSE2, SSE3, and AVX. ARM:NEON.), brand-string, frequency, cache, and temperature.
Fan	Checks the fan(s) to ensure their functionality and to confirm that the fan speed control is working.
Hard Drive	Supports SATA (connected to PCH)/SAS (connected to Broadcom 3616/3216/3108/3008)/NVMe diagnosis. The tool checks HDD S.M.A.R.T information and drive self-test status for errors. (For BCM 3008, only AOC-S3008L-L8e+ is supported.) (The drive self-test is only supported on SATA (connected to PCH) and NVMe.)
BMC	Checks the BMC I2C bus health/NIC connection status/Network Service.
Memory	Checks the DIMM temperature, and tests memory address, pattern, and bit shift. The default setting is to run the address, 8-bit pattern, and 8-bit bit-shift tests only. However, the tool also allows the use of different parameters to run 8-bit, 16-bit, 32-bit, and 64-bit pattern and bit-shift tests with a loop count.
Network	The tool requires “Network Stack” and “UEFI PXE OPRM” to be enabled in the BIOS Setup for network diagnostics. The network cable also needs to be connected and the tool will send an IP request to confirm the network connection.
PCIe	Checks all add-on cards to detect for correctable errors, non-fatal errors, fatal errors, unsupported requests, pending transactions, and diagnosis of the UEFI driver of the PCIe device. Also checks the VPD (Vital Product Data) integrity. (Detection of PCIe add-on card on riser cards is only supported on the X11 and later platforms.)
Power Supply	Detects Supermicro PSU information, including the slave address, status, input voltage, input current, input power, main output voltage, main output current, main output power, temperature, and fan speed.
Serial Interface	Conducts the serial port in-bank loopback test.
USB	Detects all USB devices and displays their information. USB diagnostics focus on over-current detection.
Backplane	Detects Supermicro TWIN system and NVMe backplane information, including node ID, backplane PN (part number), backplane SN (serial number), backplane revision, backplane location, MCU version, and configuration ID.
GPU	Detects nVidia GPU devices and displays GPU information. (Supports nVidia Tesla M4/M6/M10/M40(12GB)/M40(24GB)/M60/K20/K40/K80, Tesla P4/P40/P100 PCIe/P100 SXM2/V100 PCI/V100 SXM2/V100 SXM3 and Quardo M5000/M6000/P400/P600/P1000/P2000/P4000/P5000/P6000/GV100)
Manufacturer Data	Checks if the onboard CPLD version and manufacturer FRU are supported.

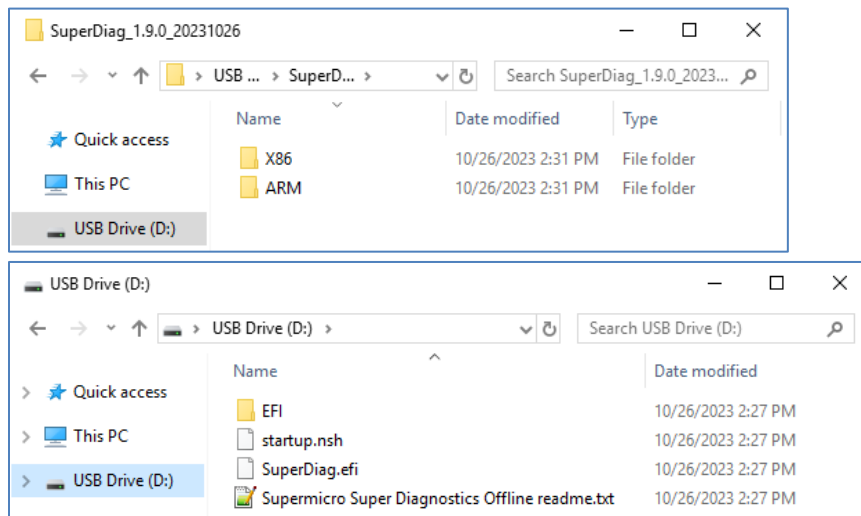
2 Diagnosing a Target System

With the Supermicro Super Diagnostics Offline, you can diagnose a target system both locally and remotely.

2.1 Diagnosing the Target System Locally

2.1.1 Running the Super Diagnostics Offline from a Flash Drive

1. Download the “SuperDiag” zip file from https://www.supermicro.com/sms_unzip and save the right folder (“X86” for Intel/AMD platforms and “ARM” for Arm platforms) to a USB pen drive. Note that the USB key must be in FAT32 format.



2. Modify startup.nsh to run your specific test item or keep the default setting to run all test items.
3. On the target system, set the boot option to **EFI USB Key**.
4. Use the USB pen drive to boot so the system automatically runs the diagnostic test.

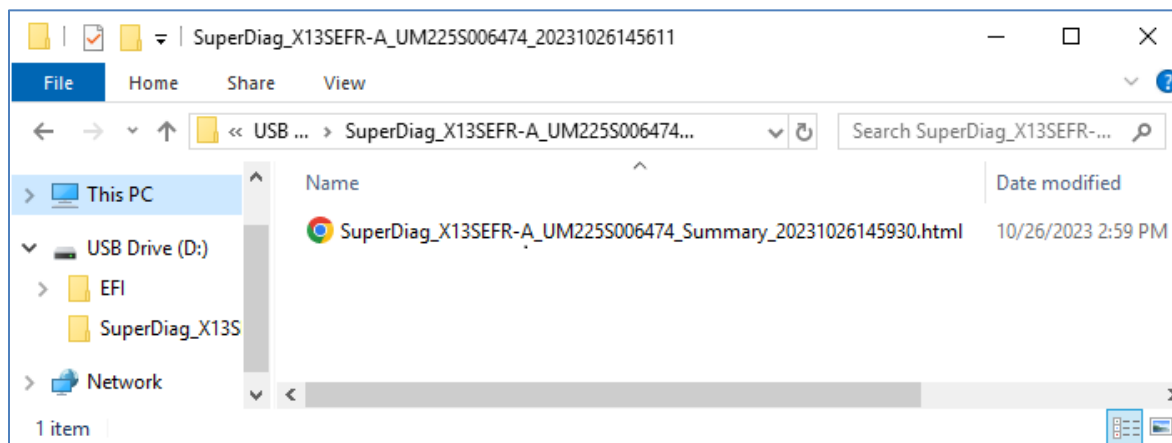
```
FS0:\> SuperDiag.efi /quick
Super Diagnostics Offline Version: 1.9.0 build 20231026
Copyright © 2016-2023 Super Micro Computer, Inc.
Execution Time      : 2023-10-26 14:55:59
Board Product Name  : X13SEFR-A
Board Serial Number : UM225S006474

Collecting information..... Done!

Detecting components..... Done!

The diagnosis next may take some time. Please wait.
Diagnosing components.....
<Current Test Information>
Type       : CPU Diagnostics
Item       : CPU #001 - Intel(R) Xeon(R) Platinum 8470 CPU @2.00GHz
Sub-Item L01 : Floating-point Test
```

5. The tool creates a folder in the USB pen drive with the board name, serial number, and time label in which to save the results. A summary log in Hypertext (.html) can be found in the folder.



6. To view the raw data in JSON format, download it from the summary log (.html) directly, and drag and drop the log file in JSN format to a Google Chrome™ browser or use another method to access data in JSON format.

SUPERMICR® Super Diagnostics Offline 1.9.0 build 20231026
Copyright © 2016-2023 Super Micro Computer, Inc. Execution Time : 2023-10-26 14:55:59

[Test Results](#) [System Information](#) [Event Log](#) [Sensor Readings](#)

Result Statistics	All	Passed	Aborted	Warning	Failed	Overall
Component Detection	14	12	2	0	0	Passed
Component Diagnostics	11	9	1	0	1	Failed

■ : Passed ■ : Aborted/Warning ■ : Failed

[Download result as JSON format](#)

Test Execution Log -- All Results

Test: Component Detection
Start Time: 2023-10-26 14:56:11
Result: Passed
Summary: ▶

Test: Component Diagnostics
Start Time: 2023-10-26 14:56:11
Result: Error(s) detected, please
Summary: ▶

Save As

This PC > Downloads

Organize New folder

Quick access

This PC

USB Drive (D:)

EFI

SuperDiag_X13SI

No items match your search.

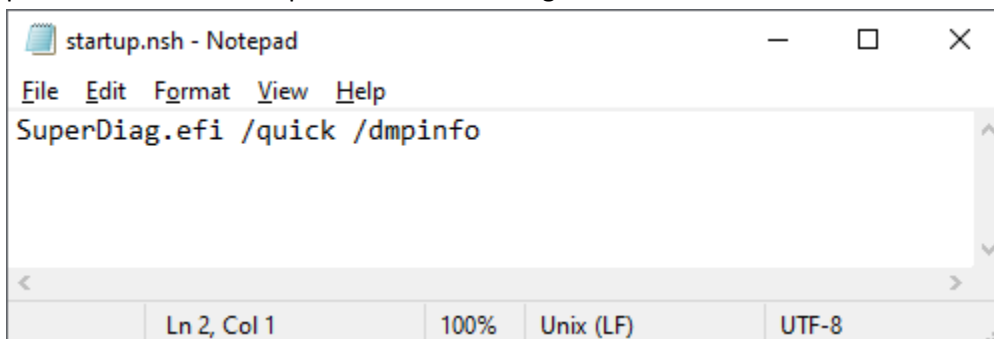
File name: SuperDiag_X13SEFR-A_UM225S006474_Result_20231026145930.jsn

Save as type: JSN File (*.jsn)

Hide Folders

Save Cancel

7. To retrieve additional information (e.g., SMBIOS and PCI registers), you can append the /dmpinfo parameter to the startup.nsh and run the diagnostic test.



To view the additional information in TEXT format, download it from the summary log (.html) directly, and drag and drop the TEXT file to a Google Chrome™ browser or use other method to access data in TEXT format.

Super Diagnostics Offline 1.9.0 build 20231026
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Test Results System Information Event Log Sensor Readings

Result Statistics	All	Passed	Aborted	Warning	Failed	Overall
Component Detection	14	12	2	0	0	Passed
Component Diagnostics	11	9	1	0	1	Failed

■ : Passed ■ : Aborted/Warning ■ : Failed [Download Additional Information](#) [Download result as JSON format](#)

Test Execution Log -- All Results





Test: Component Detection
Start Time: 2023-10-26 15:06:12
Result: Passed
Summary: ▶

Test: Component Diagnostics
Start Time: 2023-10-26 15:06:12
Result: Error(s) detected, please
Summary: ▶




Save As
This PC > Downloads
File name: SuperDiag_X13SEFR-A_UM225S006474_Info_20231026151040.txt
Save as type: Text Document (*.txt)

2.1.1.1 Viewing the Summary Log in HTML Format

The diagnosis log is summarized and shown in graphic display in Hypertext (.html). Three labels of different colors indicate the results in the table: Passed, Aborted/Warning, and Failed. Each type of result is hyperlinked and available for further examination when you click the related column title in the table.

 Super Diagnostics Offline 1.9.0 build 20231026 Copyright © 2016-2023 Super Micro Computer, Inc.		Execution Time : 2023-10-26 14:55:59				
Test Results	System Information	Event Log	Sensor Readings	Column Title		
Result Statistics	All	Passed	Aborted	Warning	Failed	Overall
Component Detection	14	12	2	0	0	Passed
Component Diagnostics	11	9	1	0	1	Failed
 : Passed  : Aborted/Warning  : Failed						
Download result as JSON format						

Here we use the Total type of results as an example to illustrate the process. To access the All type of results, click the column title **All**.

Test Results	System Information	Event Log	Sensor Readings			
Result Statistics	All	Passed	Aborted	Warning	Failed	Overall
Component Detection	14	12	2	0	0	Passed
Component Diagnostics	11	9	1	0	1	Failed
 : Passed  : Aborted/Warning  : Failed						
Download result as JSON format						

The summary of the selected type of test result then appears. To view the summary of each log record, click **Summary**.

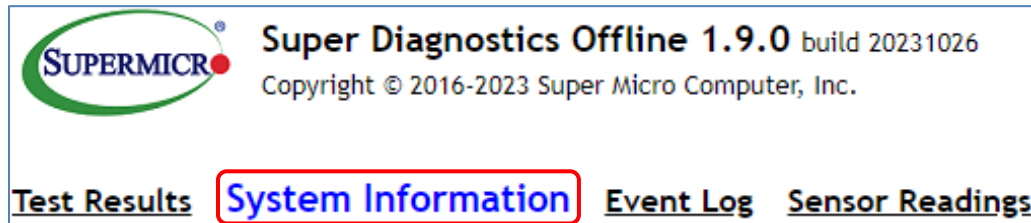
Test Execution Log -- All Results	
Test: Component Detection	
Start Time: 2023-10-26 14:56:11	
Result: Passed	
Summary: ▶	
Test: Component Diagnostics	
Start Time: 2023-10-26 14:56:11	
Result: Error(s) detected, please check for failed component(s).	
Summary: ▶	

The summary of results then appears. You can click the result label of the selected test to find out more details.


• TEST BMC Diagnostics: Failed
◦ [I2C Bus Diagnostics]: Passed
◦ [NIC Mode Diagnostics]: Failed
▪ [Dedicated Mode]
• Supported : Yes
Health Test : Failed
Fail Information : The NIC mode(Dedicated) connection test failed.
Remedial Action : Make sure a good cable is plugged into the BMC Dedicated LAN port, and the network environment is good. Ensure that the BMC is operating properly. If the failure persists, please contact Supermicro Technical Support or an FAE for troubleshooting.
Result Code : #20920232
▪ [Shared Mode]
• Supported : Yes
Health Test : Passed
▪ [Mode Capability Check]
Health Test : Passed

2.1.1.2 Viewing System Information

A list of system components can be viewed in the diagnosis log. Click **System Information** beside Test Statistics.

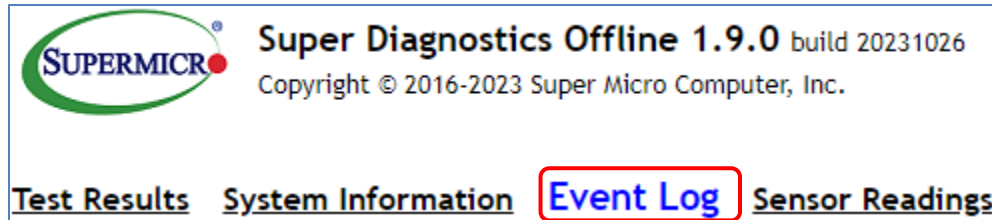


A complete list of system components appears.


 Super Diagnostics Offline 1.9.0 build 20231026 Copyright © 2016-2023 Super Micro Computer, Inc.		
Test Results System Information Event Log Sensor Readings		
Hardware Information	SMBIOS Information	Firmware Information
CPU	System	BIOS
CPU #001 Name : Intel(R) Xeon(R) Platinum 8470 CPU @2.00GHz CPUID : 000806F5 Microcode : 2B0004D0	Manufacturer Supermicro Product Name Super Server Serial Number 0123456789	Version 1.5 Release Date 2023-10-13
Memory	Baseboard	SPS ME
DIMM #001 Manufacturer : Samsung Device Locator : DIMMA1 Memory Type : DDR5 Registered DIMM (DRAM) ECC Support : Yes Speed : 4800 MHz Size : 32 GB	Manufacturer Supermicro Product Name X13SEFR-A Version 1.01 Serial Number UM225S006474	Operational Firmware Version 6.1.2.48 Recovery Firmware Version 6.1.2.48
PCIe		BMC
PCIe #001 Part Number : AOC-ATG-i2TM Serial Number : OA215S020762 Manufacturer : Intel Corporation Device Class : Ethernet Controller Device Location : Slot Device Designation : P1-AIOM PCIe5.0x16		Revision 1.01.11 Build Date 2023-08-18 GUID D301MS
PCIe #002 Manufacturer : ASPEED Technology, Inc. Device Class : VGA-Compatible Controller Device Location : Onboard Device Designation : ASPEED Video AST2600		Board
Storage		CPLD Revision F2.00.1B
Storage #001 Interface Type : AHCI Storage Type : HDD Manufacturer : Seagate Model : ST4000NM0045-1VT107 Serial Number : ZC10HQSS		
RAID		
No RAID volumes found.		
PSU		
PSU #001 Location : PSU1 Manufacturer : SUPERMICRO Device Name : PWS-2K08A-1R		
PSU #002 UNKNOWN.		

2.1.1.3 Viewing Event Log

A list of event logs can be viewed in the diagnosis log. Click **Event Log**.

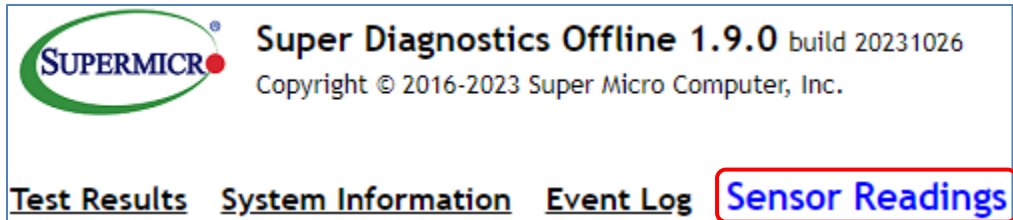


A complete list of the BIOS DMI event log, the BMC Health event log and the Maintenance Event Log appears.

 Super Diagnostics Offline 1.9.0 build 20231026 Copyright © 2016-2023 Super Micro Computer, Inc.		
Test Results System Information Event Log Sensor Readings		
BIOS DMI Event Log	BMC Health Event Log	BMC Maintenance Event Log
#001	#480	#507
Date 2023-10-13	Timestamp 2023-10-26 14:56:18	Timestamp 2023/10/26 15:04:01
Time 09:47:12	Sensor Name System NIC	User ADMIN
Code SMBIOS 0x16	Event Dir Assertion	Description [MEL-0212] The fullmbios file was uploaded successfully
Severity N/A	Description Dedicated LAN Link Down	Category Others
Description Log Area Reset/Cleared	Remedial Action N/A	Source Localhost
Remedial Action N/A	#479	Interface RMCP
#002	Timestamp 2023-10-26 14:49:25	Severity Info
Date 2023-10-13	Sensor Name Peripheral Temp	#506
Time 10:05:26	Event Dir Assertion	Timestamp 2023/10/26 15:02:59
Code EFI 03051002	Description Lower Critical - going low	User ADMIN
Severity Major	Description Check whether the environment temperature is over system SPEC. If not, please contact Supermicro Technical Support or an FAE for troubleshooting.	Description [MEL-0206] The host FW user password has been auto-generated.
Description DXE BS driver Unrecognized	Remedial Action	Category Account
Remedial Action Contact Supermicro Technical Support or an FAE for troubleshooting.	#478	Source Localhost
#003	Timestamp 2023-10-26 14:49:19	Interface KCS
Date 2023-10-19	Sensor Name Power Supply	Severity Info
Time 14:23:07	Event Dir Assertion	#505
Code SMBIOS 0x08	Description Presence detected	Timestamp 2023/10/26 15:02:47
Severity CPU	Remedial Action N/A	User ADMIN
Description CPU Failure (CPU PCU TLB Recoverable Error, Last Boot Error)	#477	Description [MEL-0207] The host FW user password has been removed.
Remedial Action Contact Supermicro Technical Support or an FAE for troubleshooting.	Timestamp 2023-10-26 14:45:39	Category Account
#004	Sensor Name Components Changed	Source Localhost
Date 2023-10-19	Event Dir Assertion	Interface IPMI
Time 16:29:46	Description DIMM removed on DIMMAD1	Severity Info
Code EFI 03051002	Remedial Action N/A	#504
Severity Major	#476	Timestamp 2023/10/26 14:58:49
Description DXE BS driver Unrecognized	Timestamp 2023-10-26 14:45:39	User ADMIN
Remedial Action Contact Supermicro Technical Support or an FAE for troubleshooting.	Sensor Name Components Changed	Description [MEL-0093] Lan Interface was configured to failover successfully.
	Event Dir Assertion	Category Network
	Description DIMM removed on DIMMAC1	Source Localhost
	Remedial Action N/A	Interface KCS
		Severity Info

2.1.1.4 Viewing Sensor Readings

A list of sensor readings can be viewed in the diagnosis log. Click **Sensor Readings**.



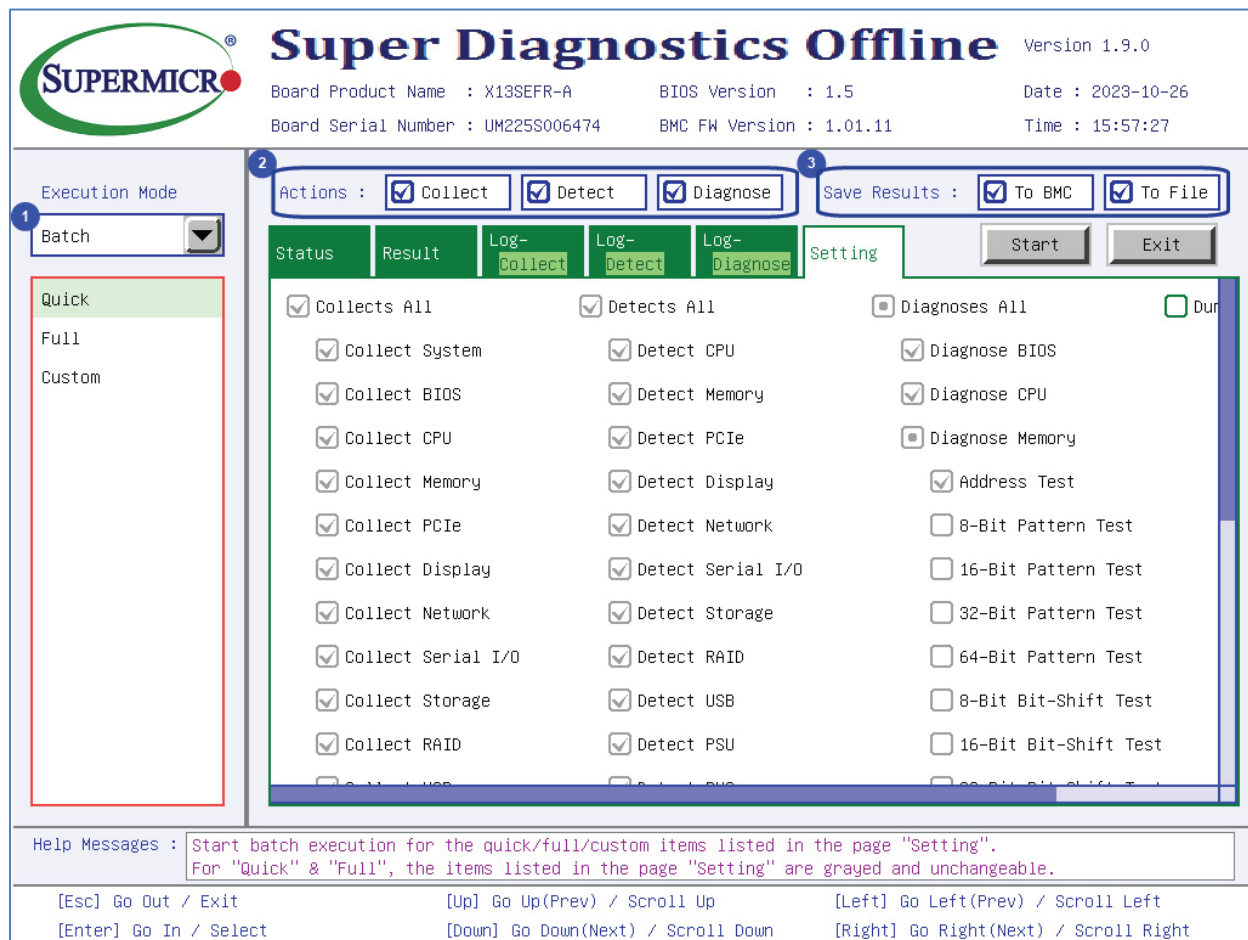
A complete list of sensor readings appears.

The screenshot shows the Super Diagnostics Offline 1.9.0 build 20231026 interface. The copyright is © 2016-2023 Super Micro Computer, Inc. The navigation bar includes Test Results, System Information, Event Log, and Sensor Readings, which is highlighted with a red box.

BMC Sensor Readings		
Sensor Name	Status	Reading
CPU Temp	Normal	34C/93F
PCH Temp	Normal	42C/108F
System Temp	Normal	33C/91F
Peripheral Temp	Normal	31C/88F
Inlet Temp	Failed	0C/32F
CPU_VRMIN Temp	Normal	34C/93F
CPU_VRMON Temp	Normal	49C/120F
CPU_VRMHV Temp	Normal	46C/115F
DIMMA-D Temp	Normal	32C/90F
DIMME-H Temp	N/A	Not Present
PMEMA-D Temp	N/A	Not Present
PMEME-H Temp	N/A	Not Present
M2_SSD1 Temp	N/A	Not Present
M2_SSD2 Temp	N/A	Not Present
FAN1	Normal	840 RPM
FAN2	N/A	Not Present
FAN3	Normal	2240 RPM
FAN4	N/A	Not Present
CPU_VCCIN	Normal	1.81 V
CPU_VCCON	Normal	1.01 V
CPU_VCCHV	Normal	1.15 V
MB 12V	Normal	12.15 V
MB 5VCC	Normal	4.98 V
MB 3.3VCC	Normal	3.29 V
VBAT	Normal	Battery presence detected.
MB 5VSB	Normal	4.98 V
MB 3.3VSB	Normal	3.29 V
PCH 1.8V	Normal	1.79 V
PCH PVNN	Normal	0.89 V
PCH 1.05V	Normal	1.05 V
BMC 2.5V	Normal	2.53 V
BMC 1.8V	Normal	1.80 V
BMC 1.2V	Normal	1.21 V
BMC 1.0V	Normal	1.01 V
PVNN_MAIN_CPU	Normal	1.00 V
MB 12VSB	Normal	12.15 V
PW Consumption	Normal	170.00 Watts
PS1 Status	Normal	Presence detected
AIOM_NIC1 Temp	Normal	53C/127F

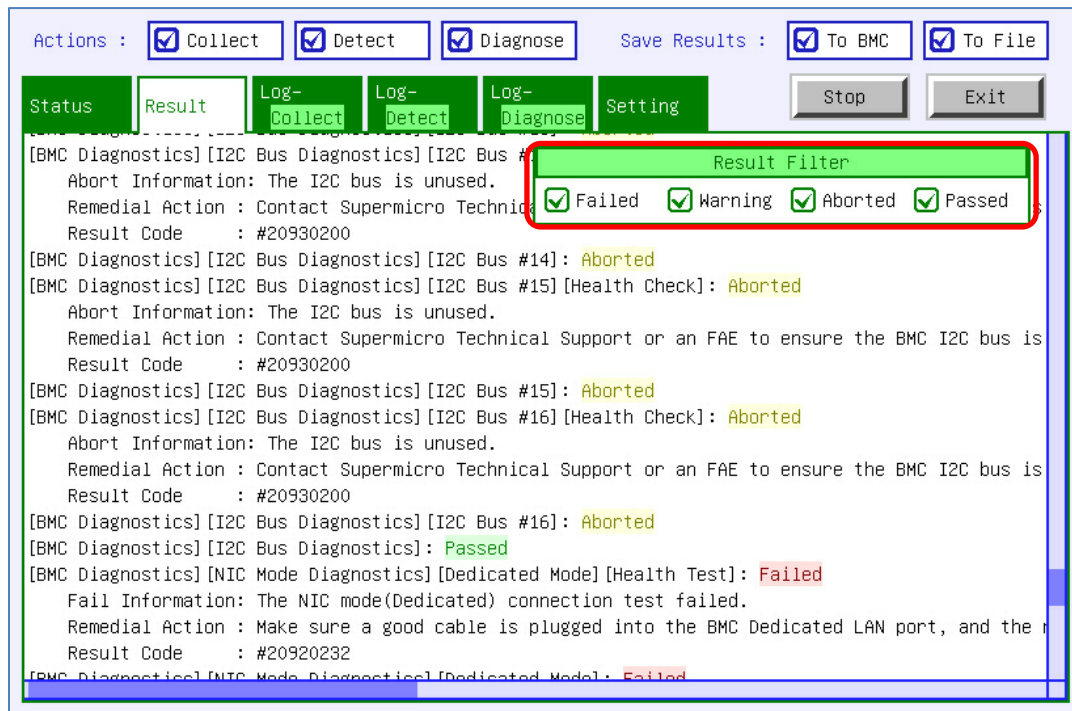
2.1.2 Accessing the Super Diagnostics Offline GUI

The GUI (graphical user interface) version is provided to assist in diagnosing the target system, requiring the graphics display resolution of **1024 x 768**. Run the command **SuperDiag.efi /gui** to access the GUI. To use the GUI, follow the steps below.



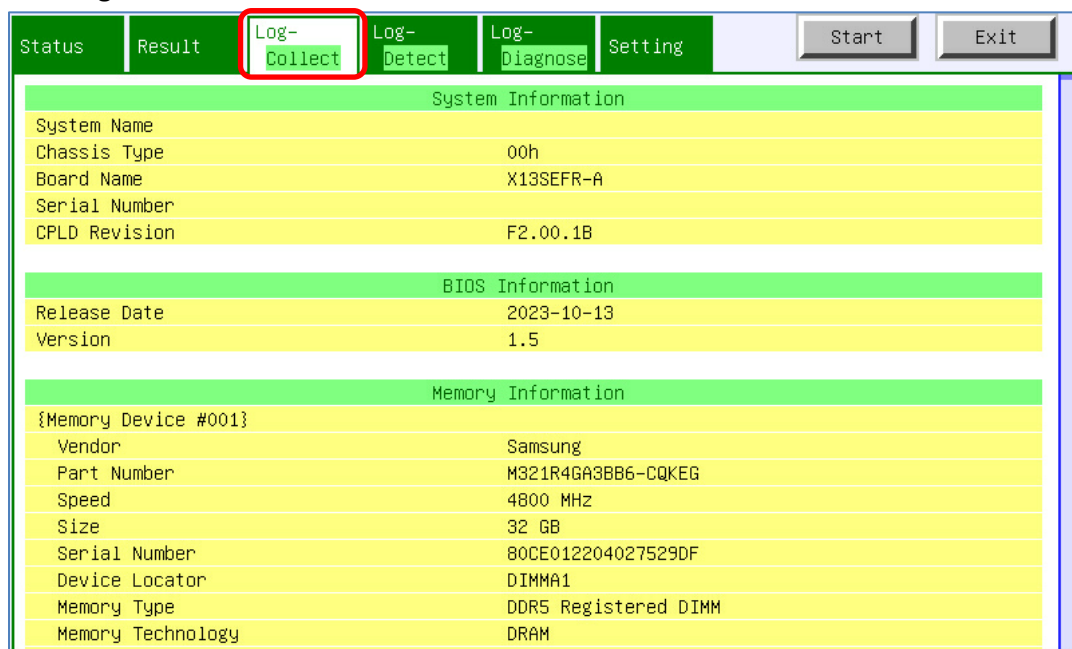
1. Use the Execution Mode drop-down list to select the desired mode. Two options are provided: Single and Batch.
 - **Single:** Select the desired items to be processed.
 - **Batch:** Select **Quick**, **Full**, or **Custom** for further process.
 - **Quick:** The selected items to be processed are selected by default and cannot be altered.
 - **Full:** Note that it will take a long time to process all items if **Full** is selected.
 - **Custom:** Click the **Setting** tab, and click the checkbox(es) of the desired items to be processed.
2. Click the checkbox(es) of the desired actions: Collect, Detect and Diagnose.
 - **Collect:** Collects the data of the selected items.
 - **Detect:** Detects if the selected items are present.
 - **Diagnose:** Diagnoses to determine if the selected items are healthy.

3. In the Save Results, click the checkbox(es) of the desired method(s) to save the diagnostic results. Two methods are provided: **To BMC** and **To File**. Note that the file is saved in .json format when **To BMC** is selected, and in .html format when **To File** is selected.
4. Click the **Start** button in the top right corner to start the process.
5. After results are returned, click the desired checkbox(es) in the Result Filter field to view the results. Four types of results are provided: **Failed**, **Warning**, **Aborted**, and **Passed**.



6. For the specific results of collection, detection, or diagnosis, click the corresponding tab.

- **Log-Collect**



- **Log-Detect**

Status	Result	Log-Collect	Log-Detect	Log-Diagnose	Setting	Start	Exit
BMC Detection							
{BMC}							
Detection							
Result		Passed					
BMC IP Address		10.140.172.63					
BMC MAC Address		3C:EC:EF:34:83:A3					
CPU Detection							
{CPU #001 - Intel(R) Xeon(R) Platinum 8470 CPU @2.00GHz}							
Detection							
Result		Passed					
Current Speed		2000					
Core Count		52					
Memory Detection							
{Memory Device #001}							
Detection							
Result		Passed					
Part Number		M321R4GA3BB6-CQKEG					
Serial Number		80CE012204027529DF					
Device Locator		DIMMA1					

- **Log-Diagnose**

Status	Result	Log-Collect	Log-Detect	Log-Diagnose	Setting	Start	Exit
BIOS Diagnostics							
BIOS Last POST Code		00h					
{BIOS Event Log(s)}							
Log Count Check							
Result		Warning					
Warning Information		Log count > 1; it is equal to or less than 1 normally.					
Remedial Action		Check details in the log "BIOS Diagnostics" section.					
Result Code		#20140100					
Log #001							
Date		2023-10-13					
Time		09:47:12					
Code		SMBIOS 0x16					
Severity		N/A					
Description		Log Area Reset/Cleared					
Remedial Action		N/A					
Log #002							
Date		2023-10-13					
Time		10:05:26					
Code		EFI 03051002					

7. To save additional information (e.g., SMBIOS and PCI registers) in a result file (.html), click the **Dump Additional Info** button before starting the diagnostics.

The screenshot displays the 'Super Diagnostics Offline' Version 1.9.0 interface. At the top, system information is shown: Board Product Name: X13SEFR-A, BIOS Version: 1.5, Date: 2023-10-26, Board Serial Number: UM225S006474, BMC FW Version: 1.01.11, and Time: 17:23:30. The 'Execution Mode' is set to 'Batch'. The 'Actions' section has checkboxes for 'Collect', 'Detect', and 'Diagnose', all of which are checked. The 'Save Results' section has checkboxes for 'To BMC' and 'To File', both checked. A table with columns 'Status', 'Result', 'Log-Collect', 'Log-Detect', 'Log-Diagnose', and 'Setting' is visible. In the 'Log-Diagnose' column, the 'Dump Additional Info' checkbox is checked and highlighted with a red rectangle. Other checkboxes in the table include 'Detects All', 'Detect CPU', 'Detect Memory', 'Detect PCIe', 'Detect Display', 'Detect Network', 'Detect Serial I/O', 'Detect Storage', 'Detect RAID', 'Detect USB', 'Detect PSU', 'Diagnoses All', 'Diagnose BIOS', 'Diagnose CPU', 'Diagnose Memory', 'Address Test', '8-Bit Pattern Test', '16-Bit Pattern Test', '32-Bit Pattern Test', '64-Bit Pattern Test', '8-Bit Bit-Shift Test', and '16-Bit Bit-Shift Test'. The 'Start' and 'Exit' buttons are at the bottom right. A 'Help Messages' section at the bottom left shows 'Output Area'.

8. When finished, click the **Exit** button in the top right corner to leave the GUI.

2.2 Diagnosing the Target System Remotely

2.2.1 Running the SMCIPMITool

There are two methods to run the SMCIPMITool remotely. You can run the tool with either a UEFI flash drive or a UEFI bootable ISO image. The SMCIPMITool can run on different platforms. Refer to the commands below to start the SMCIPMITool in shell mode.

Platform	Command
Java	<code>java -jar SMCIPMITool.jar <IP> <username> <password> shell</code>
Windows	<code>SMCIPMITool.exe <IP> <username> <password> shell</code>
Linux	<code>SMCIPMITool <IP> <username> <password> shell</code>

2.2.1.1 With a Pen Drive

1. Download the zipped package “SuperDiag” from <https://www.supermicro.com/sms>.
2. Locate and unzip the file “USBForRemoteSuperDiag.zip”, and then save it to a pen drive.
3. Insert the drive in the system, then type “vmwa devllist” to locate the pen drive.
4. Type “diag start drv <index>” to start the tool.

Example:

```
10.136.33.131 X10DRFR <S0/G0.113w> 10:45 ASPD_T>vmwa devllist
2: [F: USB Flash]
3: [C: IDE HD]
4: [D: IDE HD]
10.136.33.131 X10DRFR <S0/G0.113w> 10:45 ASPD_T>diag start drv 2
```

2.2.1.2 With a UEFI Bootable ISO Image

1. Download the zipped package “SuperDiag” from <https://www.supermicro.com/sms>.
2. Locate and unzip the file “ISOForRemoteSuperDiag.zip” to the system.
3. Type “diag start iso <image>” to start the tool.

Example:

```
10.136.160.132 X11DPT-PS <S5/G2> 15:26 AST2500>diag start iso SuperDiag_v1.1.0_20180724.iso
Mounting ISO file: SuperDiag_v1.1.0_20180724.iso
Device 2 :UM Plug-In OK!
Set boot device done
Powering off system for diagnostic initialization
Powering up the system
Action: Collecting
Action: Detecting
```

2.2.1.3 Diagnostics Explained

The following steps illustrate how the diagnostics are executed.

1. Virtual Media is started to mount the diagnostics image.
2. The boot option is set to UEFI.

-
3. The remote system is powered off.
 4. About 10 seconds later, the remote system is powered on.
 5. Super Diagnostics Offline is started to run the check-up.
 6. SMCIPMITool will monitor after the diagnostic progress is complete. Once it is complete, “done” is shown on the screen of the system where the SMCIPMITool is run.

2.2.1.4 Executing the Commands

To diagnose the target system remotely, execute the following three commands.

Command	Description
diag start	Starts diagnosing the target system.
Diag download <filename>	Downloads the diagnostic results.
Diag display <JSON file>	Displays the diagnostic results from the file.

2.2.1.4.1 diag start

The following steps illustrate how this command is executed.

1. Virtual Media is started to mount the diagnostics image.
2. The boot option is set to UEFI.
3. The remote system is powered off.
4. About 10 seconds later, the remote system is powered on.
5. Super Diagnostics Offline is started to run the check-up.
6. SMCIPMITool will monitor the diagnostics after the diagnostic progress is complete. Once it is complete, “done” is shown on the screen of the system where the SMCIPMITool is run.



Notes:

- This command only works properly in shell mode.
 - To execute the `diag start` command on Windows 10 with a pen drive, it is necessary to disable User Access Control (UAC). To disable UAC, follow these steps:
 - 1). Type “regedit” in the command line to open the Registry Editor window.
 - 2). In the Registry Editor window, double-click the **HKEY_LOCAL_MACHINE** folder to expand the folders: **SOFTWARE > Microsoft > Windows > CurrentVersion > Policies > System**.
 - 3). In the right pane, right-click **EnableLUA**, select **Modify**, enter “0” in the Value data field, and click **OK**.
 - 4). Click **Restart Now** to restart the system for the changes to take effect.
-

2.2.1.4.2 diag download <filename>

The following steps illustrate how this command is executed.

1. The OEM command “generalFileDownload” is executed to download the JSON file from the BMC.
2. The JSON file is saved in the local system.

Example:

```
10.136.160.132 X11DPT-PS (S0/G0,172w) 13:53 AST2500>diag download result.json
=====
Prepare reservation ID
=====
Reservation ID: 5A 00

=====
Prepare download file
=====
.

Max Chunk Size = F2 BF 00 00

=====
Download file
=====
File Size: 49138 bytes
=====
Download file done
=====
```

2.2.1.4.3 diag display <JSON file>

The following steps illustrate how this command is executed.

1. The JSON file is retrieved from the local system.
2. The JSON file is parsed and the result is displayed.

Example:

```
10.136.160.132 X11DPT-PS (S0/G0,173w) 16:12 AST2500>diag display result.json line 30
ESMC.UtilityName: Super Diagnostics Offline
ESMC.UtilityVersion: 1.1.0
System Information:
  System Name:
  Chassis Type: 01h
  Board Name:
  Serial Number: S263707X7726781
  CPLD Revision: 03.B0.06
BIOS Information:
  Release Date: 11/05/2018
  Version: 2.1
Memory Information:
  Memory Device #001:
    Vendor: SK Hynix
    Part Number: HMA84GR7AFR4N-UK
    Speed: 2666 MHz
    Size: 32 GB
    Serial Number: 118F8ED8
    Device Locator: P1-DIMMA1
  Memory Device #002:
    Vendor: SK Hynix
    Part Number: HMA84GR7AFR4N-UK
    Speed: 2666 MHz
    Size: 32 GB
    Serial Number: 118F8BC9
    Device Locator: P1-DIMMB1
  Memory Device #003:
    Vendor: SK Hynix
    Part Number: HMA84GR7AFR4N-UK
    Speed: 2666 MHz
Press any key to continue...
```

To display the specific diagnostic results, you can use the parameters “pass,” “fail,” “info,” or “line” as filter criteria.

Parameter	Description
pass	Displays the items that have passed the diagnostics.
Fail	Displays the items that have failed the diagnostics.
Info	Displays the items and their basic information.
Line	Limits the numbers of display line.

Usage Examples:

Diag display <JSON file> pass

Diag display <JSON file> fail

Diag display <JSON file> info

Diag display <JSON file> line[number]

2.2.1.4.4 Saving Diagnosti Results in Ramdisk

The diagnostic results are automatically saved in Ramdisk as summary logs in HTML format. To access a log entry, find the log location in the screen outputs.

```
[Component Detection]
Start Time: 2021-12-11 05:03:50
Result: Passed
Total Type Count: 14, Passed Count: 10, Aborted Count: 4, Warning Count: 0, Failed Count: 0

[Component Diagnostics]
Start Time: 2021-12-11 05:03:51
Result: Warning
Total Type Count: 8, Passed Count: 5, Aborted Count: 3, Warning Count: 0, Failed Count: 0

Overall Result: Passed

Generating diagnostics result. Please wait.
Successful to save result to FS1:\SuperDiag_X11SPW-CTF_HM194S002136_20211211050350\SuperDiag_X11SPW-CTF_HM194S002136_Summary_20211211050432.html.
```

2.2.2 Running the SuperServer Automation Assisnt (SAA)

You can remotely run the SAA using a UEFI bootable ISO image. Refer to the commands below to start diagnostics.

2.2.2.1 Getting the SuperDiag ISO Image

1. Download the zipped package “SuperDiag” from <https://www.supermicro.com/sms>.
2. Locate and unzip the file “ISOForRemoteSuperDiag.zip” to the system.

2.2.2.2 Running the SuperDiag Command

Use the “SuperDiag” command to run diagnostics, download and review diagnostic results.

2.2.2.2.1 Starting Diagnostics

Use the "SuperDiag" command with the "--action Start" option to start diagnostics.

Single System	
OOB	saa -i <IP or host name> -u <username> -p <password> -c SuperDiag --action Start [--file <ISO image> --image_url <URL of ISO image> [--dev_id <index>]] --reboot
Multiple Systems	
OOB	saa -l <system list file> -c SuperDiag --action Start --file --image_url <URL of ISO image> [--dev_id <index>] --reboot

2.2.2.2.2 Downloading Diagnostics Results

Use the "SuperDiag" command with the "--action Download" option to download diagnostic results in JSON format.

Single System	
OOB	saa -i <IP or host name> -u <username> -p <password> -c SuperDiag --action Download --file <results.json> [--overwrite]
In-Band	saa -c SuperDiag --action Download --file <results.json> [--overwrite]
Multiple Systems	
OOB	saa -l <system list file> -c SuperDiag --action Download --file <results.json> [--overwrite]

2.2.2.2.3 Reviewing Diagnostics Results

Use the "SuperDiag" command with the "--action Display" option to review diagnostic results.

Single System	
In-Band	saa -c SuperDiag --action Display --file <results.json> [--type <display type>] [--keyword <keyword>] [--line <number>]

2.2.2.2.4 Examples of Command Applications

OOB:

```
[SAA_HOME]# ./saa -i 192.168.34.56 -u ADMIN -p PASSWORD -c SuperDiag --  
action Start --file SuperDiag_1.9.0.iso -reboot
```

```
[SAA_HOME]# ./saa -i 192.168.34.56 -u ADMIN -p PASSWORD -c SuperDiag --  
action Start --image_url '\2001:db8::1\MySharedPoint\MyFolder\Image.iso'  
--dev_id 2 --reboot
```

```
[SAA_HOME]# ./saa -i 192.168.34.56 -u ADMIN -p PASSWORD -c SuperDiag --  
action Download --file results.json
```

In-Band:

```
[SAA_HOME]# ./saa -c SuperDiag --action Download --file results.json
```

```
[SAA_HOME]# ./saa -c SuperDiag --action Display --file results.json --  
type info --keyword BIOS
```

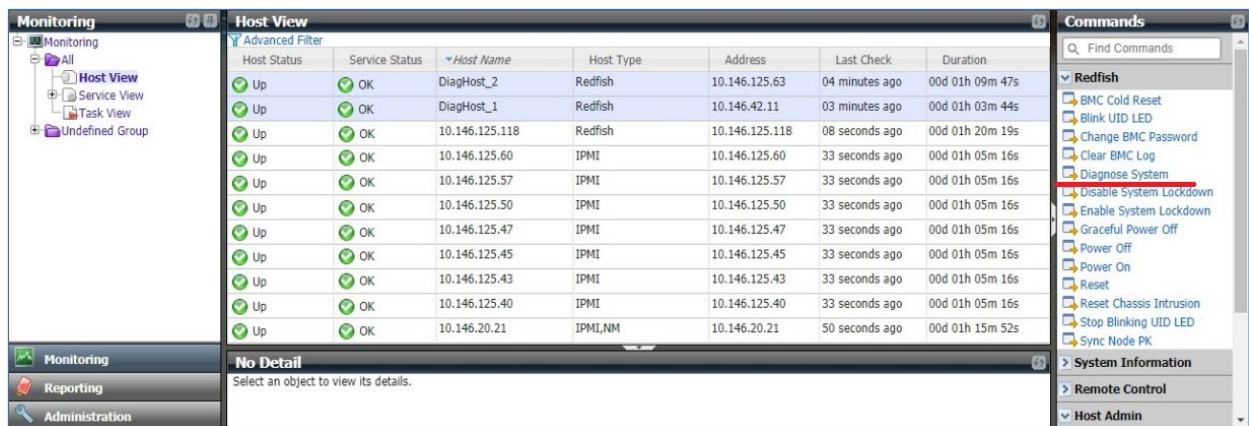
```
[SAA_HOME]# ./saa -c SuperDiag --action Display --file results.json --  
type fail --line 20
```

2.3 Running with Remote Management Software

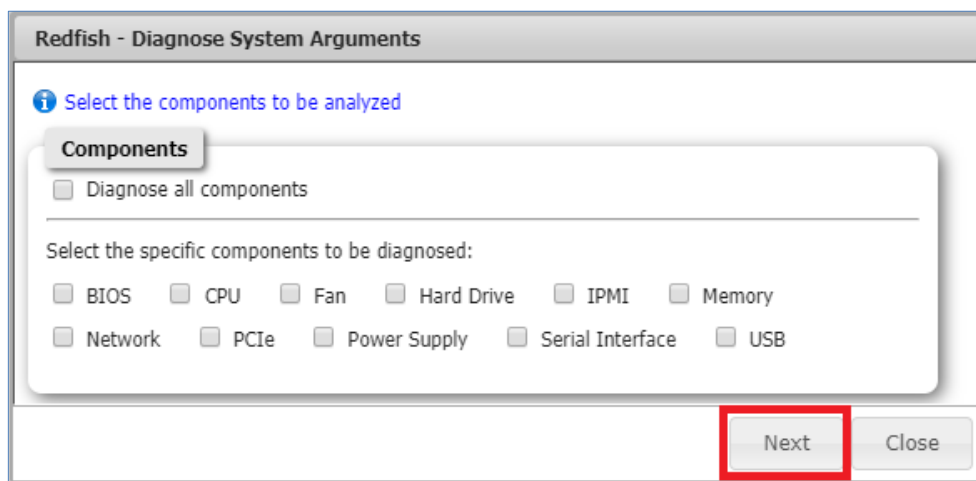
Super Diagnostics Offline can be used together with other remote management software so that you can view the diagnostic results of the target system via software. For now, only SSM (Supermicro Server Manger) is available for this function. Note that the target system must support SUM (Supermicro Update Manager), and its motherboard must be of Supermicro X12/H12 series or later generation.

To run Super Diagnostics Offline with SSM, follow these steps.

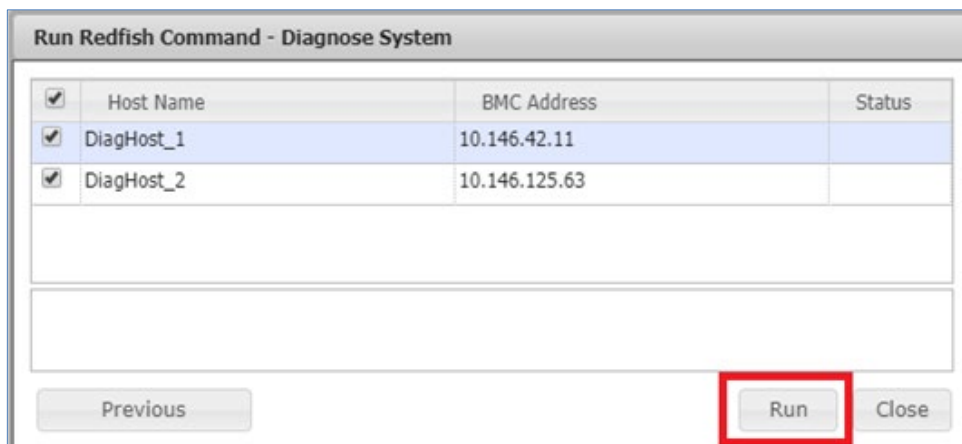
1. In the SSM Monitoring pane, expand the **All** folder, click **Host View**, select the desired target system to be diagnosed listed in Host View, expand the **Redfish** folder in the Commands pane on the right, and then click **Diagnose System**.



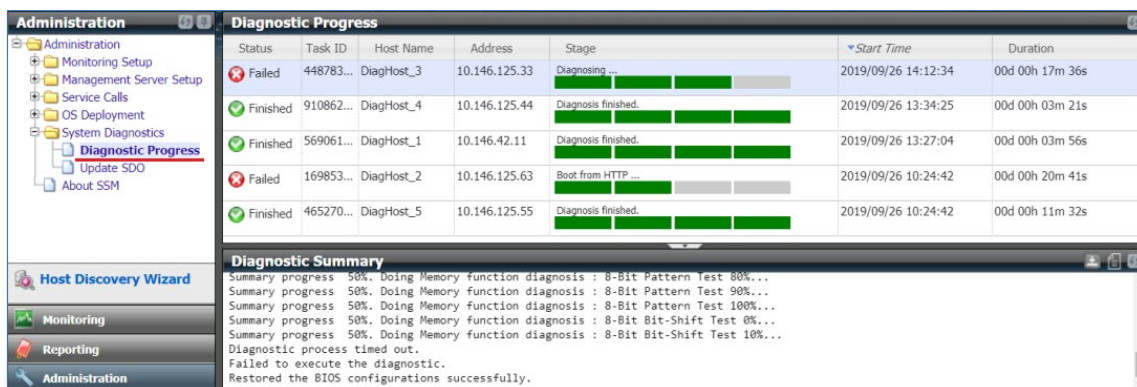
2. In the Redfish – Diagnose System Argument dialog box, click the checkboxes of the components to be diagnosed, and click **Next** to continue.



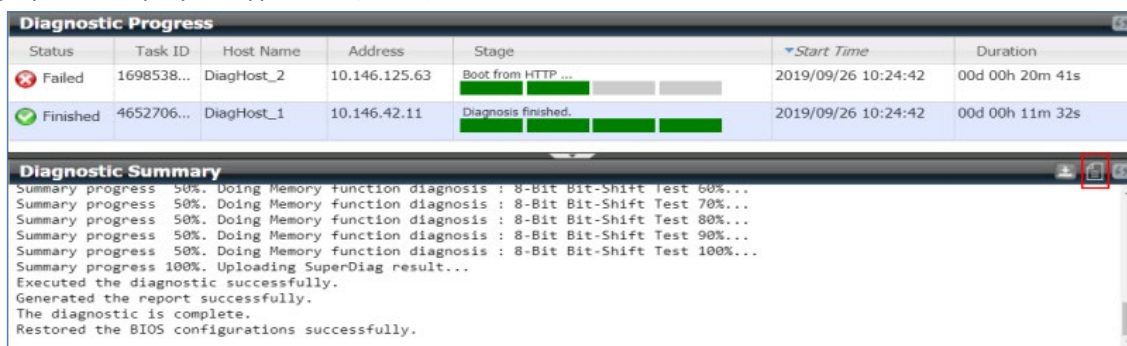
- Click **Run** to start the diagnostic process. Note that the diagnosis will take a longer time.



- To view the diagnostic process, expand the **System Diagnostics** folder, click **Diagnostic Progress** in the 33dministration pane to view the tasks running on the right.



- After the diagnostics are finished, click the **View Report** icon in the top right corner of the Diagnosis Summary toolbar to view the diagnostic report. The diagnostic report is summarized and shown in graphical display in Hypertext (.html) format. For details, see 2.1.1.1.



2.4 Advanced Tips

During the tool execution, you may interrupt the process via local keyboard or remote console.

- Press the <Esc> key to stop the diagnostics. This not only cancels all tasks, but also exits the tool.
- Press the <Ctrl> and <C> keys to bypass memory tests in progress and to proceed to the next task. This key is specific to stopping memory tests.

3 Using Parameters

To have the Supermicro Super Diagnostics Offline conduct a thorough or specific inspection, you may execute the commands with different parameters to meet your needs.

3.1 Primary Parameters

Primary parameters should be used with the prefix "/".

Parameter	Description
/help	Displays all supported parameters and their instructions.
/quick	Performs all actions, including collecting, detecting, and diagnosing, except 16-bit/32-bit/64-bit memory diagnostics
/full	Performs all actions, including collecting, detecting, and diagnosing.
/dga	Runs diagnostics on all of the collected and detected devices.
/gui	Accesses the graphical user interface of Supermicro Super Diagnostics Offline.
/ca	Collects all information.
/cst	Collects system information.
/cbs	Collects BIOS information.
/cm	Collects memory information.
/cpc	Collects PCIe information.
/cc	Collects CPU information.
/cn	Collects network information.
/cd	Collects display subsystem information.
/cu	Collects USB information.
/ch	Collects HDD information.
/cr	Collects RAID information.
/cps	Collects PSU information.
/css	Collects sensor information.
/ci	Collects BMC information.
/cbp	Collects backplane information.
/csr	Collects serial I/O information.
/cg	Collects GPU information.
/dta	Detects all.
/dti	Detects BMC.
/dtc	Detects CPU.
/dtm	Detects memory.
/dth	Detects HDD.
\$sst	Selects Drive Short Self-Test.
\$lst	Selects Drive Long Self-Test.
\$dsst	Deselects Drive Short Self-Test.
\$dlst	Deselects Drive Long Self-Test.
/dtr	Detects RAID.
/dtn	Detects network.

Parameter	Description
/dtu	Detects USB.
/dtd	Detects subsystem display.
/dtpc	Detects PCIe.
/dtps	Detects PSU.
/dtf	Detects fans.
/dtbp	Detects backplane.
/dtsr	Detects serial I/O.
/dtg	Detects GPU.
/dgbs	Diagnoses BIOS.
/dgc	Diagnoses CPU.
/dgm	Diagnoses memory.
\$adr	Selects <Address Test>. (Default)
\$p08	Selects <8-Bit Pattern Test>. (Default)
\$p16	Selects <16-Bit Pattern Test>.
\$p32	Selects <32-Bit Pattern Test>.
\$p64	Selects <64-Bit Pattern Test>.
\$b08	Selects <8-Bit Bit Shift Test>. (Default)
\$b16	Selects <16-Bit Bit Shift Test>.
\$b32	Selects <32-Bit Bit Shift Test>.
\$b64	Selects <64-Bit Bit Shift Test>.
\$dadr	Deselects <Address Test>.
\$dp08	Deselects <8-Bit Pattern Test>.
\$db08	Deselects <8-Bit Bit-Shift Test>.
\$lp	Specifies test loop count, e.g. "\$lp 6". (Default: 1)
/dgh	Diagnoses HDDs.
\$sst	Selects Drive Short Self-Test.
\$lst	Selects Drive Long Self-Test.
\$dsst	Deselects Drive Short Self-Test.
\$dlst	Deselects Drive Long Self-Test.
/dgn	Diagnoses network.
/dgpc	Diagnoses PCIe.
/dgps	Diagnoses PSU.
/dgf	Diagnoses fans.
/dgi	Diagnoses BMC.
/dgsr	Diagnoses serial I/O.
/dgu	Diagnoses USB.
/rms	Uploads the diagnostic progress and result to the remote server through Rest API. *Currently this command is limited to reporting to a Supermicro Server Manager (SSM) server.
/dmpinfo	Dumps additional information, e.g., SMBIOS and PCI/PCIe registers.

3.2 Secondary Parameters

The corresponding secondary parameters are listed right after the primary parameters are typed and should be used with the prefix "\$".

Parameter	Description
\$dst	Deselects the test item.

3.3 Usage Examples

Scenario	Command
Diagnosing all except memory.	SuperDiag.efi /full /dgm \$dst
Diagnosing memory repeatedly.	SuperDiag.efi /dgm \$p16 \$p32 \$p64 \$b16 \$b32 \$b64 \$lp 20
Reading the parameters.	SuperDiag.efi /help

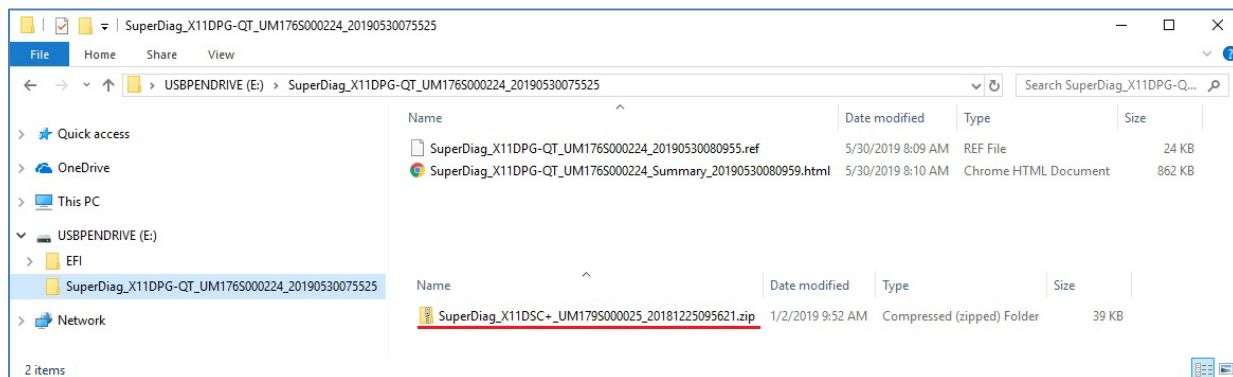
4 Troubleshooting

When a failure result is found, follow the instructions in “**Remedial Action**” in the diagnosis results to solve the problem. If the condition remains, send the required data (e.g., diagnosis results) and provide the **result code** to Supermicro for troubleshooting.

```
"@SMC.UtilityName": "Super Diagnostics Offline",
"@SMC.UtilityVersion": "1.2.0",
"@SMC.Copyright": "Copyright © 2016-2019 Super Micro Computer, Inc.",
"@odata.type": "Diagnostics Data",
"Timestamp": "2019-05-30 04:15:08",
"IPMI Diagnostics": {
  "I2C Bus Diagnostics": {},
  "NIC Mode Diagnostics": {
    "Current Mode": "Failover",
    "Dedicated Mode": {
      "Supported": "Yes",
      "Health Test": {
        "Result": "Failed",
        "Fail Information": "The NIC mode(Dedicated) connection test failed.",
        "Remedial Action": "Make sure a good cable is plugged into the BMC Dedicated LAN port,
                           and the network environment is good. Ensure that the BMC is operating properly.",
        "Result Code": "#20920202"
      }
    }
  }
}
```

4.1 Diagnosing the Target System Locally

The diagnosis results are saved in a folder created automatically. For details, see [2.1.1 Running the Super Diagnostics Offline from a Flash Drive](#). Find the folder in the USB pen drive, zip it, and send it to Supermicro.



4.2 Diagnosing the Target System Remotely

The diagnosis results are saved in the BMC. Follow the steps in [2.2.2.2 diag download <filename>](#) to download the JSON file and send it to Supermicro.

5 Third-Party License

The following open source libraries are used in the SuperDiag package:

Program	Library	License
SuperDiag	EDK II	BSD

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